1849MNRAS...9...39.

ROYAL ASTRONOMICAL SOCIETY.

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Capt. W. H. Smyth, R.N., Vice-President, in the Chair.

The Rev. A. D. Wackerbarth, Riverside, St. Peter's, Hammersmith;
Samuel Charles Whitbread, Esq., Cardington, Bedfordshire;
The Rt. Hon. Sir Lancelot Shadwell, Vice-Chancellor of England;
W. M. Fisher, Esq., 39 Great George Street, Liverpool;
Rev. Alfred Weld, Director of the Observatory at Stoneyhurst College, Lancashire;
Charles B. Chalmers, Esq., Weston Super Mare, Somerset;
Rev. J. N. Peill, B.D., Queen's College, Cambridge;
George William Carrington, Esq., 2 Park Prospect, St. James's Park;
were balloted for and duly elected Fellows of the Society.

Wm. Cranch Bond, Esq., M.A., Director of the Observatory at Cambridge, Massachusets, Fellow of the American Academy of Arts and Sciences, &c., was balloted for, and duly elected an Associate of the Society.

Transit of Mercury, Nov. 8 *and* 9, 1848, *at Durham.*

		h	m	s		
External Contact at Nov. 8,		23	5	32·14,	Greenwich M.T.	very uncertain
Internal Contact	——		6	55·90,	——	ingress complete.

These observations were made by Mr. Thompson with the Fraunhofer equatoreal.

The same phenomena were observed by Professor Chevallier and another observer, the image of the sun being projected on a screen.

	Professor Chevallier.			2d Observer.			
	h	m	s	h	m	s	
External Contact	23	5	50·78	23	5	40·81	Greenwich M.T.
Internal Contact		7	21·53		7	10·57	

The following observations were made by Professor Chevallier with the Northumberland equatoreal of 5 inches' aperture and 7 feet focal length; they are corrected for the difference of refraction and parallax, and for the sun's motion in the interval between the observations of the planet and the sun: the images of the sun and planet were thrown on a screen:—

1849MNRAS...9...39.

Differences of Right Ascension of the Centres of Mercury and the Sun, Mercury compared with Sun's Second Limb.

1848.	Greenwich M.T. h m s	R.A. Mercury — R.A. Sun. s	No. Obs.
Nov. 8	23 12 18·74	+62·68	9
	17 4·99	60·84	10
	21 13·85	59·36	10
	27 58·93	+56·70	10
Nov. 8	23 33 4·84	+54·80	7
	0 40 18·20	51·99	3
9	0 28 43·82	34·05	6
	1 15 38·18	+16·52	6

The transits of *Mercury* and of the second limb of the sun were observed over one meridian wire at each observation.

In the following observations the transits of the planet and of both limbs of the sun were observed over the meridian wire placed in the focus:—

	Greenwich M.T. h m s	R.A. Mercury — R.A. Sun. s
Nov. 9	1 23 0·22	+13·93
	25 37·08	+12·70
Nov. 9	1 28 12·44	+12·08
	31 4·46	+10·78

The image of the sun was now referred to five equidistant wires drawn on the screen itself; but this method was found to be inaccurate, as the screen required frequent readjustment.

	Greenwich M.T. h m s	R.A. Mercury — R.A. Sun. s
Nov. 9	1 40 33·81	+7·00
	44 18·40	+6·22
	48 58·62	+4·18
	2 1 2·99	—0·41
	4 46·81	—1·70
Nov. 9	2 8 0·11	—2·81
	11 21·30	3·95
	15 44·86	6·01
	20 35·1	—7·36

The semidiameter of the *Nautical Almanac*, used in the above computations, agrees very well with the semidiameter obtained by the observed transits on the screen: 15 observed transits give 1ᵐ 7ˢ·946, instead of 1ᵐ 7ˢ·87.

Differences of North Polar Distance of Centres of Mercury and Sun, observed by Mr. Thompson with the Fraunhofer Equatoreal.

1st. When the planet is compared with south limb of the sun.

	Greenwich M.T. h m s	N.P.D. Mercury — N.P.D. Sun. ′ ″	Limb Planet Obsᵈ.
Nov. 8	23 12 2·1	+3 56·1	Cent.
	(16) 5·5	3 50·5	S.
	22 52·3	3 25·7	Both
	31 25·9	3 0·3	N.
	36 20·1	2 52·4	Both
	23 40 20·5	2 39·0	N.
Nov. 9	32 30·9	+0 32·2	Both
	1 15 58·7	—1 15·1	Both
Nov. 9	1 19 4·2	—1 23·4	N.
	21 22·9	1 27·3	N.
	23 39·5	1 30·8	Both
	25 41·1	1 37·3	Both
	27 12·9	1 40·6	N.
	28 54·5	1 49·9	Both
	1 30 45·3	—1 50·8	Both

1849MNRAS...9...41.

2d. When the planet is compared with the north limb of the sun.

1848.	Greenwich M.T. h m s	N.P.D. Mercury — N.P.D. Sun. ′ ″	Limb Planet Obsd.		Greenwich M.T. h m s	N.P.D. Mercury — N.P.D. Sun. ′ ″	Limb Planet Obsd.
Nov. 9	1 36 39·3	−1 59·2	Both	Nov. 9	1 58 56·7	−2 52·4	Both
	38 53·9	2 3·9	Do.		2 1 1·4	3 0·4	Do.
	40 39·7	2 7·7	Do.		(4) 0·9	3 4·7	Do.
	45 28·9	2 19·4	Do.		18 46·0	3 40·8	Do.
	47 13·5	2 25·5	S.		19 54·3	3 44·4	Do.
	49 13·2	2 22·3	Cent.		23 22·8	3 50·9	S.
	51 12·9	2 31·3	S.		25 32·4	3 59·8	Both
	54 35·4	2 42·9	Both		2 27 5·2	−4 5·3	N.
	1 56 21·1	−2 46·3	Do.				

"When the number of minutes is placed within brackets, there is an uncertainty of a minute.

" In the earlier part of the observations, the sun's limb was ill-defined in the equatoreal; but it was well seen afterwards. The sun's image received on a screen was very clear throughout the observations."

Mr. Thompson made some observations in right ascension with the Fraunhofer equatoreal at the beginning of the transit, but the sun's limb was so badly defined and the wind so troublesome at that time, that he does not place any reliance on them.

IRIS.

LIVERPOOL. Equatoreal. (Mr. Hartnup.)

1848.	Greenwich M.T. h m s	R.A. h m s	$\log \frac{p}{P}$	N.P.D. ° ′ ″	$\log \frac{q}{P}$	Star.
Dec. 21	13 24 11·7	10 26 55·39	−8·474	86 38 9·7	−9·889	*a*
	14 0 22·7	55·62	8·400	16·3	9·887	*a*
	14 31 53·6	55·84	8·313	22·7	9·885	*a*
1849. Jan. 3	14 18 31·8	10 27 8·33	8·188	87 30 30·3	9·890	*b*
	14 53 12·5	8·11	−8·129	33·4	−9·889	*b*

a......B.A.C. 3684 *b*......B.A.C. 3600

The places of the stars are taken from the catalogue. Log $\frac{p}{P}$ and log $\frac{q}{P}$ have the signification given to them by Professor Challis, in vol. viii. p. 206, of the *Monthly Notices.*

HAMBURG. Equatoreal. (M. C. Rümker.)

1848.	Hamburg M.T. h m s	R.A. ° ′ ″	Decl. ° ′ ″
Dec. 10	15 21 14·7	155 42 48·5	+4 26 51·8
14	13 21 56·3	156 10 45·7	4 1 32·4
19	13 13 47·0	36 22·2	3 32 34·0
20	13 0 2·0	40 13·8	27 23·7
21	12 43 1·6	43 37·4	22 13·8
24	12 39 59·8	51 27·5	3 7 17·6
26	12 12 34·6	54 21·0	2 58 37·1
28	12 10 20·9	156 55 21·5	+2 50 18·7